Abstract

Title:

An electromyographical analysis of the influence of water environment on the rehabilitation of patients with Parkinson's disease

Aims:

The main aim of this Master's thesis was to compare electrical activity of selected muscles of patients with Parkinson's disease via electromyography during gate aground and in water environment. Furhter aim was to determine co-contraction level of leg muscles of patients with Parkinson's disease during gait aground and in water environment.

Methods:

This thesis is a case study, which was conducted on five probands, two of which were men and three women of age 67,4±7,1. With the use of surface electromyography, an activity was evaluated of m.tibialis anterior, m.gastrocnemius, m. rectus femoris, m. biceps femoris and mm. erectores spinae in place of Th –L junction. Acquired EMG signal was analized and then a standarized level of muscle activity during gait in different environments was evaluated, aground and in water, and afterward a dynamic co-contraction level was evaluated.

Results:

The results show consistent standardized activity of monitored muscles in water environment, which describes a chronic influence of pathological central program accompanying Parkinson's disease, where a change in coordination pattern is not observed, typical for movement in water environment. The results of this study did not prove the water environment to have a positive influence on the rehabilitation of the patients with Parkinson's disease.

Key words:

Parkinson's disease, water environment, surface electromyography, water surface electromyography